

Invited Lecture I

“Telerobotic Gastrointestinal Surgery, Telepresence Surgery & Robotic Teleconferencing”

Garth H. Ballantyne, M.D., F.A.C.S., F.A.S.C.R.S

*Professor of Surgery, Hackensack University Medical Center
Hackensack, New Jersey, USA*

Robotic surgery is entering its second decade. The FDA approved the first surgical robot, the voice controlled camera-holder AESOP, in 1993 and the first telerobot in 2000. Surgeons have been performing telerobotic gastrointestinal operations for five years. Preliminary case series indicate that telerobotic GI surgery is feasible and can be performed with outcomes similar to equivalent laparoscopic procedures. Telerobotic operations generally require longer operative times than laparoscopic operations. Telerobotic cholecystectomy and telerobotic fundoplication offer excellent training environments for novice robotic surgeons. The wristed instruments, tremor filtration, motion scaling and 3-dimensional imaging of the da Vinci telerobotic system facilitate more advanced laparoscopic GI operations. Findings by the Academic Robotics Group suggest that esophageal perforation during telerobotic Heller myotomy is decreased compared to laparoscopic myotomy. The motion scaling and excursion arcs of the da Vinci system favor a medial to lateral dissection rather than a lateral to medial technique during telerobotic colectomy. The wristed instruments and 3-dimensional imaging of da Vinci simplify the construction of GI anastomoses in gastric bypass for morbid obesity and other GI resections. Professor Hashizume in Japan favors a da Vinci approach for Stage 1A (T1 N0) and Stage 1B (T1N1, T2N0) gastric cancers. Professor Giulianotti in Italy argues that the full capabilities of da Vinci are only utilized in operations that require precision dissection and difficult anastomoses such as in pancreatoduodenectomy. The US military first designed telerobotic surgical systems for telepresence surgery on wounded soldiers in the battlefield. Professor Marescaux demonstrated the feasibility of trans-Atlantic telerobotic surgery by performing from New York City a cholecystectomy on a patient in Strousberg, France. Professor Anvari now routinely performs telerobotic cholecystectomies and funduplications from Hamilton, Ontario on Eskimos in the remote Artic. Robotics now permit mobile teleconferencing with connections anywhere in the world. RP6, for example, permits telerounding on patients in Hackensack, New Jersey from Seoul, Korea via a standard wideband Internet connection.

Garth Hadden Ballantyne, M.D., F.A.C.S., F.A.S.C.R.S.

Current Status

- Professor of Surgery, University of Medicine and Dentistry of New Jersey, Newark, New Jersey
- Director, Center for Minimally Invasive Surgery
- Chief, Division of Minimally Invasive Surgery, Hackensack University Medical Center, Hackensack, New Jersey

Educations

- College Harvard College, A.B., Magna Cum Laude, Biology, 1973
- Medical School College of Physicians and Surgeons, Columbia University, M.D., 1977
- Residency Columbia Presbyterian Medical Center Surgery (PGY1 & 2)
University of California at Los Angeles, Surgery (PGY3)
Northwestern Memorial Hospital, Surgery (PGY4 & 5)
Saint Luke's Hospital, Cleveland, Ohio, Surgery Chief Resident (PGY6)
- Fellowship Clinical Fellow, Colon & Rectal Surgery, Mayo Clinic, Rochester (1983~1984)

Societies

- MIRA (Minimally Invasive Robotics Association), President (2004-present)
- Fellow, American College of Surgeons
- Fellow, American Society of Colon & Rectal Surgeons
- Association for Academic Surgery (Education Committee, 1988-1989), etc

Editorial Positions

- North American Editor, Surgical Research Communications, 1985-1995
- Editorial Board, Surgical Research Communication, 1995-present
- Editorial Board, Surgical Laparoscopy & Percutaneous Techniques
- Editorial Board, Revista de Endoscopia Quirurgia

NIH Study Section

- Surgical & Bioengineering Study Section (2004)

Academic Appointments

- Professor of Surgery, University of Medicine and Dentistry of New Jersey (1997.7.1-present)
- Associate Professor of Surgery, Yale University School of Medicine (1989.7.1-1994.6.30)
- Assistant Professor of Surgery, Yale University School of Medicine (1984.7.1-1989.6.30)

Clinical Positions

- Assistant Chief, Surgical Services, West Haven VA Medical Center (1989.5.1-1994.6.30)
- Acting Chief, Surgical Services, West Haven VA Medical Center (1989.1.1-1989.4.30)
- Chief, Section of General Surgery, West Haven VA Medical Center (1987-1994)
- Director, Surgical Intensive Care Unit, West Haven VA Medical Center (1985-1992)
- Chief, Colon & Rectal Clinic, West Haven VA Medical Center (1984-1994)
- Staff Surgeon, West Haven VA Medical Center (1984-1994)
- Attending Surgeon, Yale-New Haven Medical Center (1985-1994)
- Senior Attending, St. Luke's Roosevelt Hospital Center (1994-present)
- Attending Surgeon, Beth Israel North Medical Center (1995-present)
- Senior Attending Physician, Hackensack University Medical Center (1997-present)

Publications

- 141 scientific articles
- 5 books and 44 chapters
- Editorial Issues of Journals
 - 1) Ballantyne GH (Ed). Robotic & Telerobotic Surgery. Surgical Laparoscopy, Endoscopy & Percutaneous Techniques. 2002; volume 12#1 (February)
 - 2) Gill IS, Sung GT, Ballantyne GH (Eds). Robotics in Surgery. Surgical Clinics of North America. WB Saunders Co. Philadelphia, PA. 2003; 83: #6.